

THE METAMORPHOSIS OF BOLINA CHUNI. Nov. Spec.

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Plates XLIV.-XLV.

The extreme delicacy of Ctenophoræ in general must in a great measure be considered as the reason why so few of these Cœlenterata have been described from Australian waters. Nevertheless they really appear to be rare. During my three years stay in the colonies, a great part of which time was devoted to the investigation of marine animals I have only met with two species one of which was very abundant in Port Jackson. The swarms consist apparently of *Bolina* and *Cydippidæ*, but I found after I had examined a great number of specimens, that the *Cydippidæ* were nothing else than the young stages of the *Bolina*.

The metamorphosis of this Genus has been studied by A. Agassiz (1), and Chun (2) describes the development of *Eucharis multicornis*. In both these cases as well as in a few other species of *Lobata*, the young stages are similar to *Cydippe*.

The metamorphosis of our *Bolina* is nevertheless slightly different from that of *Bolina alata* described by Agassiz (l.c.)

The larvæ possess for a long time a perfectly circular transverse section. (Fig. 5), and are depressed neither in the Gastral nor in the funnel-plane. The paddle-lines are in the young larva much longer than in corresponding stages of other *Lobate*. The apical Gallert masses protrude far beyond the sense organ.

I shall first describe the adult animal

(1.) *A. Agassiz*. North American Acalephæ. Illustrated Catalogue of the Museum of Comparative Zoology. No. II, 1865.

(2.) *C. Chun*. Die Ctenophoren des Golfes von Neapel. Fauna und Flora des Golfes von Neapel. Band I.

BOLINA CHUNI. Nov. spec.

Body slightly compressed. Lobes when expanded about as long as the body. Surface smooth. Auricels long and triangular with straight sides and a sharp-pointed end. Bulges above the nerve-center high, paddles not large and rather numerous. Adradial canals join the proximal part of Meridional vessels. Curves of the lobe-vessels simple.

Size: Length 11 Cm., breadth of lobes 9 Cm.

Colour: Perfectly transparent. Lobe-vessels in the adult violet.

The most striking feature of this *Bolina* is the great bulk of the lobes, which are thicker than the body, and nearly circular. The lobe-vessels are extremely simple and show the characteristic arabese-shaped curves only when the lobe is contracted. The muscles in the lobe are clearly visible forming an extremely delicate network of radial and circular fibres, which however, are by no means so distinct as those in *Eucharis multicornis*. The body appears in its upper end decidedly truncate. The stomach is rectangular and much broader than in other species.

The sense organ is situated about 1 Cm., below the aboral end of the body.

The specific name needs no explanation.

DEVELOPMENT.

The youngest *Bolina Chuni*, which I obtained was a globular larva with about 3 mm., in diameter. (Fig. 3). Decidedly pear-shaped it differs from the larvæ figured by Agassiz and Chun in shape very much, as the narrow part is the oral, whilst the broad part, the aboral end of the animal.

The sense organ lies more than half way below the aboral end of the body, a peculiarity which is met with in very much younger larvæ of *Eucharis* and *Bolina alata*. I have mentioned before that the transverse section of this, as well as of later stages, is circular. It appears that the larva of *Eucharis* is compressed in another direction than the adult animal. (Chun l.c., p. 122.) Agassiz (l.c., p. 15) states that *Bolina* is compressed in the same direction throughout. It appears, therefore, that this character is subjected to greater changes than has been supposed.

The gastro-vascular system of our larva resembles one stage of *Eucharis* very closely. (Chun l.c., Tafel. IX., fig. 7.) The two tentacles are very long. (Fig. 3), extended up to ten times the length of the body.

A later stage, measuring 8 mm. in diameter, is represented in figures 4 and 5.

The difference between it and *Eucharis* larvæ of a similar size mainly consists in the greater width of the canals in the former, and in the peculiarity that the tentacles arise very much further from the point where the main channel branches, so that a continuation of the perradial canal stem is formed which extends as far beyond the branches as these are distant from the centre (Fig. 5.)

The paddle-lines are long, and lines can already be traced connecting them with the aboral pole. (Fig. 4.)

The lobes are very small, about the same size as in a 6 mm. larva of *Eucharis*. When the animal attains a length of about 3 Cm., all its parts are developed and it presents the same appearance as the largest.

The lobes of the smaller species are carried much further apart, more horizontally than in the larger individuals.



EXPLANATION OF PLATES XLIV. AND XLV.

BOLINA CHUNI.

- Fig. 1.—Large specimen in natural size, painted from life. Seen from the funnel-plane.
 Fig. 2.—The same from the Gastral-plane.
 Fig. 3.—Youngest larva, magnified four diameters, painted from life.
 Fig. 4.—Older larva, magnified about four diameters from the Gastral-plane, painted from life.
 Fig. 5.—The same from above.